

DR. ARNING'S REPORT.

Honolulu, H. I., April 10, 1884.

To His Excellency W. M. GIBSON,
President of the Board of Health.

SIR:—I have the honor to submit to Your Excellency a Report on my work in connection with leprosy, carried on during my stay on these Islands.

After my arrival, about the middle of November last year, and pending the erection of a suitable locality for carrying on my work by the Government, I endeavored to inform myself on the different views held here in regard to the disease and the modes of dealing with it.

Several things at once struck me very forcibly. Firstly, that I had either been misinformed by an excellent authority on an exceptional degree of malignancy which leprosy showed on these Islands, or that this malignant type and quicker course of the disease had, with the more general spread, gradually given place to the eminently chronic character which it exhibits in its older and established domains. My informant was Dr. Hillebrand, and he wrote to me from his experience, gathered more than fifteen years ago; that on these Islands, and at his time, leprosy killed its victims within three to five years, whereas I now find the average run of a case of leprosy is between ten and fifteen years. It will, of course, be extremely difficult to get at exact numbers in this respect, as leprosy is not a disease where we are able to fix a well-defined time of commencement; but we shall have to attach value to such a statement by an intelligent observer, even without its being based on statistics, and infer therefrom that leprosy actually exists in a milder form than it did during the first decades of its spread on these Islands.

I was further surprised to find it accepted on some parts that the disease in question is a certain form or stage of syphilis—i. e., is in every case dependent on previous syphilis, and if at all communicable, could only be transferred by syphilis.

I avow that this hypothesis, which, if true, would entirely overthrow our hitherto accepted ideas not only of leprosy, but still more so of syphilis, seem to me to be so extraordinary and self-condemning that it would scarcely necessitate my entering on the subject in this report; but, on the other hand, the theory has been most energetically brought before the public and found believers, so that I consider it my duty to support with the full force of my opinion the endeavors of other members of the medical profession who have already some time ago refuted this idea. The theory is, perhaps, not quite as harmless as many would believe, as it had led, and may still further lead, the public to consider leprosy as an outcome of licentiousness, which term certain classes of society unhappily seem to use as a synonym of syphilis, and to look upon the unfortunate lepers as the victims of their own or their parents' transgressions.

Singularly enough, it never seems to have struck the promoters and believers of this theory that in it is implicitly given the clue to the cure and eradication of leprosy.

If leprosy be the outcome of syphilis, then all our efforts should be directed towards the latter, which happens to be one of the disease most amenable to treatment; then all the laws and regulations of private and public sanitation should aim at the prevention of the

spread of syphilis; then we should segregate all persons suffering from syphilis, and have syphilis settlements instead of leper settlements.

I will not go into the details of the difference of syphilis and leprosy in clinical and pathological aspect; but I wish it to be understood that neither clinically nor pathologically does the leprosy of these Islands present any peculiar feature or combination of symptoms which any physician accustomed to see and treat syphilis would recognize as belonging to the latter. Moreover, I am led to believe from what I have observed here myself, and gathered from other physicians, that syphilis is not nearly as prevalent here as has been generally stated. An inquiry on this subject, issued by the Board of Health, would, perhaps, recommend itself, and very likely lead to a correction of the general opinion in this matter.

It is evident that one case of leprosy brought on in a subject where there is no trace either of hereditary or acquired syphilis will overthrow the theory of the unity of the disease, even if hundreds of cases could be brought forward where there is a history of previous syphilis. I have already been successful in collecting such evidence.

In the beginning of December I could start my microscopic work. I was then able to prove the presence of the same micro-organism which Hansen and Neisser first demonstrated in leprosy tissue, and which has received the name of *Bacillus Leprae*. I have now examined leprosy tissue from Norway, Spain, Syria, Surinam, and these Islands, and find the same changes due to the invasion of the same germ. At first I was baffled in my attempts to find the bacillus here. The delicate manipulations you have to apply to the tissues in order to show its presence seemed to work differently here than at home, but by varying the methods I have succeeded. Following up the spread of the bacillus in the various tissues gained from three post-mortem examinations—(two at Kakaako and one at Kalawao)—and by excisions of tubercles from the living, is at present the chief work I am occupied with; the aims are manifold. Firstly, to gain knowledge of the paths the germ follows in the organism, and the changes it brings about in the tissues of the body; then to gather information as to the life history of the germ itself; and last, but not least, to see to what extent the presence of the bacillus can be used as a practical test for leprosy.

With regard to this latter proposition, I am able to say distinctly that I have found the bacillus in every case of tuberculous leprosy I have examined, and that it cannot be found in any other disease. As yet, I have not been able to prove its presence in the blood or in the spots and sores of anæsthetic cases. In these cases I believe I shall find the bacillus in the nerves supplying these parts with vitality, and I have good reasons to hope that I shall soon be able to publish proofs of this opinion.

I have further extended my microscopic examinations to other diseases, which have of late been attributed to the invasion of a healthy organism by parasitic germs. In three cases of consumption occurring amongst natives, I have found Koch's bacillus tuberculosis; likewise in gonorrhœa and pneumonia the same germs that have been proved to cause these diseases in Europe. Nor have I failed in detecting in various skin-diseases the itch, the white *kane* spot, and the *puupuu*, which are so

prevalent amongst the natives, the same closely allied animal and vegetable parasites which are known to produce corresponding diseases in other countries.

A current belief that leprosy has been extensively propagated by careless and indiscriminate vaccination, induced me to try and vaccinate lepers with a view of possibly finding the germ in the pustule. Unluckily, although I tried to procure the best lymph, the vaccination did not take in any one of the cases. The experiments will be repeated with new lymph I have ordered.

Inoculation of leprosy on all sorts of animals—dogs, cats, rabbits, guinea-pigs, birds, and fish—has of late been perseveringly tried by quite a number of authorities, so far without result as regards general infection. I have procured a monkey for carrying on these experiments.

With a view to ascertain what becomes of the millions of germs a leper harbors after his death, and whether there is a possibility of their infecting the soil, I have, on a visit to Molokai, caused a grave to be opened in which a leper had been buried a year ago. A portion of the crumbling dust was removed, and will be examined in due course.

My time during the next six months will be chiefly devoted to cultivation experiments—i. e., to try and grow the *Bacillus Leprae* on specially prepared substances outside of the human body. This work is of the most tedious and delicate nature, and always associated with many discouraging failures; but, nevertheless, it has to be undertaken, forming an essential part of the modern methods of investigating disease.

As regards treatment of the disease, I consider it altogether unwarrantable to call leprosy incurable, and simply to remove the afflicted out of sight. This is a remnant of mediæval barbarism which every professional man ought to oppose, more especially so in our relation to a race which has had our civilization forced upon it, and which is accustomed to look up to us for help and support. Is it not fostering their innate sense of indifference to hygienic principles, instead of setting them a fair example, when we gather together very nearly a thousand suffering people in a lonely spot, and let them have only a flying visit of a doctor once a month? We medical men consider it one of the foremost principles of our work to grapple with disease to the very last; and if even in acute cases, where we see death imminent, we think it right not to give in, but to try and stay the fast ebbing current of life; then much less should we leave fellow-creatures suffering from an eminently chronic disease to succumb gradually without even an effort to help them.

And for the nonce, even accepting the oft-repeated assertion, that both history and personal experience show us that we have to deal with a disease which we are not able to arrest by general treatment; there will be work enough in store for us to help these outcasts through other troubles not in direct relation to leprosy. But we ought never for a moment, to accept the saying of the incurability of leprosy as true; but ought to go on fighting against it. Perhaps we have been on the wrong track of treatment, and there is yet a solution of the problem to be found. The recent experiences concerning the germ nature of disease may be the means of showing us the path of rational treat-

ment; and they must and do give a new impulse and new encouragement to us to persevere in trying and experimenting. But then we must not expect to find an arcana, an oil or extract with very nearly supernatural qualities, as has only too long been done in connection with this most intractable disease; but must act systematically on a rational basis, individualizing the cases and trying to benefit them by saving what can be saved of their vitality. And then there is a vast field for local surgical treatment, apart from general medication. What should we think of the surgeon who would leave large ulcerating surfaces and sores without attempting to heal them, or would not timely remove a bone which is mortified by *Syphilis* or *Tuberculosis*, and is keeping up painful and detrimental irritation, and should it be otherwise in leprosy? Why are we entitled to leave scores of leprous eyes to decay and waste away, while there is a chance of saving, if not at all, at least a large part of them, by skilful surgical interference. One of the most common operations in ophthalmic surgery, is for an inflammation of the inner eye due to *Syphilis*, and by it hundreds of eyes are saved. And for a similar inflammation occurring in leprosy, should do nothing but stand and watch blindness slowly but merely coming on?

I find there is no foundation in saying that lepers will not stand surgical interference. Excisions of tubercles and excision and stretching of nerves have been performed by me, and the wounds heal as readily as in other individuals.

Besides this there is another potent agent which ought to be extensively applied in treating this disease—viz. electricity. I have, in two cases, by a three months' course of electrical treatment, been able to restore, in a marked degree, the muscular power of withered leprosy hands; and I know of other cases where this treatment has been similarly efficacious.

I think it is self-evident that any bacterial disease is more likely to be successfully combated in its initial stages, before the organism has lost its power of resistance and recovery, and we ought, therefore, to look out for cases presenting the very first symptoms, especial in children and young people.

That there are numerous such cases amongst the rising generation no one, who has paid any attention to the question, can deny. I had, before the official examinations of the school children were ordained, examined two of the schools in this city; and found, in one of them amongst ninety-five scholars, five; in the other, amongst fifteen scholars, three cases of initial leprosy; which would be at a ratio of 7.27 per cent. I then and there advised these patients to be removed from the schools; since then a few more cases have been removed by the examining physicians. What strikes me as particularly necessary at the present moment, is to provide suitable accommodations for these children. It seems to me to be perfectly unjustifiable to take these children out of the schools on account of the danger of their communicating the disease to their school-mates, and to cast them back on their families. The danger to the community is not lessened in the least. These are not such cases as have hitherto been segregated as confirmed lepers; indeed, some of them appear to be, otherwise, in splendid bodily health. And surely it would be more conducive to their maintaining this general good health, if they could be kept in their regu-

lar training with its beneficial influence on mind and body, instead of idling away their time at home. We require a home for these children where the regular school training is kept up as far as possible; where there is a reliable person to look after them and see that the orders of the attending physician are carefully carried out. This home ought to be as cheerful a retreat as possible, in a healthy location where the inmates can roam about within certain limits, and where there is plenty of good food and air. Decidedly advanced and bad cases ought to be kept entirely out of the sight of these children.

I will not dwell, in this report, on the merits and draw-backs of the Molokai Settlement and the Branch Hospital at Kakaako, as they present themselves, to my opinion, but I believe that instead of enhancing it these two institutions detract from each other's value, and that this condition will last as long as Kakaako is kept up as an over-crowded Leper Settlement.

It will be seen from the foregoing, that I advocate segregation; and I may be asked to first prove the actual power of contagion in leprosy. To this I reply: that from what we already know of the nature of the disease, we are entitled to enforce segregation; even without the question of actual contagion being indefinitely settled. We know that leprosy is dependent on the invasion of the human body by a microscopic germ which has the power to increase indefinitely in the tissues. Therefore we must look upon every single leper as a hot-bed of disease, quite independently of the exact condition under which he can transmit it to others. He, at any rate, breeds and multiplies a poisonous germ; and is, on this account, dangerous. A similarly infected locality we would hasten to quit, as we are not able to remove it from us. But in the case of leprosy, which is bound to individuals and not to localities, it is more expeditious to remove the infected individuals from the unaffected members of the community.

Hoping that Your Excellency will favorably consider this report, and the views and suggestions therein contained,

I remain, yours most respectfully,

EDWARD ARNING, M. D.

EXTRACT FROM THE BOARD OF HEALTH REPORT.

Dr. Hillebrand's Recommendation of Dr. Arning to Investigate the Question of Leprosy.

Dr W. Hillebrand, a former resident of the islands, and very highly esteemed in this community, called the attention of Mr. Gibson, President of the Board of Health, to the importance of the Government, engaging the services of Dr. Arning in a letter dated, Montreux, Switzerland, Dec. 16, 1882; from which are extracted the following valuable and interesting statements:

"That in consideration of the important results for the welfare of the Hawaiian people, which are likely to derive from the intended investigation on the contagium of Leprosy, the Hawaiian Government declare itself ready to assist Dr. Arning, either by a direct grant or otherwise." "The sum in question is very moderate, simply large enough to cover the expense of living on the Islands for the space of nine months. I imagine that you will be justified to set aside a small portion of the money appropriated by the Legislature for sanitary purposes. If not, you